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wing sections are discussed by Messrs. H. E. Russell, C. L. Brand, and D. W. Douglas. They experimented with and tested the aerodynamical constants published by the British Advisory Committee for Aeronautics for wing profile R.A.F. 6, and found the results to be sufficiently precise for purposes of aeroplane design.

J. C. Hunsaker discusses stability of steering of a dirigible, citing some of his experimental tests with a wooden model of a dirigible hull fitted with rudders and fins in accordance with regular practice. It is now possible to base the design of fin and rudder area upon his data instead of "rule of thumb." His experiments proved that with the size rudder and fin fitted (7.79 and 3.47 sq. inches), the ship could be held on its course by the use of not more than $16\frac{1}{2}$ degrees of rudder. The importance of a vertical rudder was proved, but it was found impossible in practice to give sufficient vertical fin area to hold the ship on its course without the use of the helm.

The pitching and yawing moments on a model of a Curtiss aeroplane chassis and fuselage, complete with tail and rudder, but without wings, struts or propeller are set forth in an article by Messrs. Hunsaker and Douglas. Swept back wings are discussed by Messrs. Russell and Brand, who maintain that with a sweep back of ten degrees an appreciable righting moment may be expected without change in any of the other aerodynamical properties of the straight wing.

In order to ascertain whether the righting moment secured by swept back wings as investigated by Messrs. Russell and Brand, could be better obtained by another method, Messrs. Hunsaker and Douglas experimented with dihedral angle wings. They maintain that the dihedral angle wings afford better results than the swept back wings, and since the former are built much more easily, it is believed that the dihedral is of more value for pur-

poses of lateral stability. Attention is called to the fact that the "Langley aerodromes" built by the late Secretary of the Smithsonian Institution, were equipped with dihedral angle wings inclined upwards about six degrees. The last article is by J. C. Hunsaker and deals with critical speeds for flat discs in normal wind.

LONG-RANGE WEATHER FORECASTS

THE chief of the U. S. Weather Bureau has sent us a statement to the effect that in the opinion of the bureau a new system of long-range weather forecasting, which has been widely discussed recently, is quite fallacious. The new system is said to be based on the spottedness of the sun and rifts and shafts of solar radiation. In the opinion of the Weather Bureau it belongs in the same class with other methods of long-range weather forecasting based on lunar, planetary, magnetic and astrological considerations. None of these systems has any scientific value.

During the past few years the Weather Bureau has received full specifications concerning all the essential details of this particular system. The alleged discovery is, therefore, fully known to the Weather Bureau and has been carefully studied and examined by its scientific staff. Moreover, other scientific men of international reputation now connected with the strongest institutions of the world engaged in astronomical research, and conducting investigations into solar and terrestrial physics, have also passed upon these new theories. These authorities are in accord that the deductions and conclusions drawn from the solar conditions on which the new system is based are unwarranted.

When the disk of the sun is minutely examined with powerful telescopes, or when it is photographed with the aid of the modern spectroheliograph, the surface presents a characteristic spotted appearance which undergoes slight changes from day to day, and greater

changes with longer intervals of time, depending upon the well-known rotation of the sun upon its axis and the periodic recurrence of the sunspot maxima and minima. These and certain well-known related phenomena are now put forward as the basis of a new science which will make possible forecasts of the weather far in advance. That these features of solar activity, however, actually should control and determine the daily changes and sequence of weather conditions in any definite or direct and consequential manner, is quite impossible. Solar phenomena of the kind described do not have any direct influence upon the weather at any particular time and place, and can not be made the basis of any forecasts whatsoever.

The alleged discovery is only one of a number of similar schemes which are continually being put forward. In some cases the advocates assert that they can forecast the weather for weeks or months in advance, and in others they state that they have found means of producing rain artificially, of preventing hail, and in other ways of interfering with and controlling atmospheric phenomena. These pretensions meet with a certain credence because there are a number of people who still cling to the ancient belief in the influence of the moon on the growth and development of crops, and to the idea that the weather conditions depend upon planetary and astrological combinations. In consequence the Weather Bureau has been called upon from time to time to caution the general public against putting faith in these so-called discoveries.

The U. S. Weather Bureau is the authorized agency of the government to collect meteorological observations and make and issue weather forecasts and warnings. Every important nation of the world has a similar organization and all use essentially the same methods. All these organizations condemn and disprove the methods and theories of those who assert that they are able to predict the weather for any considerable period in advance.

SCIENTIFIC ITEMS

WE record with regret the death of Dr. Harry Clary Jones, professor of physical chemistry in the Johns Hopkins University; of Theodore Pergande, of the Bureau of Entomology; of Wells Woodbridge Cooke, of the Biological Survey; of John Wesley Judd, formerly professor of geology and dean of the Royal College of Science, London, and of Ernst Mach, emeritus professor of the history and theory of inductive science at Vienna.

DR. HENRY FAIRFIELD OSBORN, president of the American Museum of Natural History, gave the William Ellery Hale Lectures at the meeting of the National Academy of Sciences in April. The subject was "The Origin and Evolution of Life on the Earth."—Dr. George Sarton, who is now lecturing in the United States on the history of science, the former editor of *Isis*, an international review devoted to the philosophy and history of science, published in Belgium, but discontinued during the war, has been awarded the Prix Binoux by the Paris Academy of Sciences.

APPROPRIATIONS amounting to \$1,200,000 have recently been made by the Rockefeller Foundation. To the Rockefeller Institute for Medical Research is given \$1,000,000 for additional endowment needed in connection with the Department of Animal Pathology, recently established near Princeton, N. J. To the Rockefeller Institute for Medical Research, \$25,000 goes for the cost of medical work at the seat of war in Europe. Most of this appropriation will be used for the support of the research and hospital work being conducted by Dr. Alexis Carrel in France. The China Medical Board receives \$125,000 for the purchase of additional property adjoining the Union Medical College in Peking. The international committee of the Young Men's Christian Association receives \$50,000 in support of the work in the military prison camps of Europe.